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CURRENT THERAPY

Rheumatic Fever*- Postcommissurotomy Syndrome

By Jack A. Bernard, M. D., F. A. C. P., El Paso

As more mitral commissurotomies are being performed, we are more likely to be confronted with the so called "postcommissurotomy syndrome". Its incidence is reported as being from 10 to 30 per cent. It may occur as early as ten days after operation and has occurred as late as fourteen months postoperatively.

It does not appear to be due to acute rheumatic fever, bacterial infection, pulmonary infarction or the direct trauma of surgery alone. A similar complication has not been observed following cardiac or thoracic surgical procedures in non-rheumatic patients, for example, in congenital heart surgery or other thoracic operations on the heart such as cardiopericardiopexy.

Chest Pain and Fever

The syndrome is characterized by chest pain and fever, usually sharp sticking pain, together with a less prominent and frequent cough, hemoptysis, dyspnea and arthralgias. Evidence of pericarditis and pleuritis is obtained, with leukocytosis and elevated erythrocyte sedimentation rate. Bacteriologic studies yield negative results.

Penicillin prophylaxis is ineffective and antibiotics fail to modify the course. Salicylates appear to abbreviate the illness.

No significant change in the antistreptolysin-O titer occurs. The C-reactive protein seems to be the most sensitive laboratory test and the most useful in management.

It has been suggested that the syndrome represents a self-limited form of pericarditis and pleuritis induced by the trauma of surgery in patients with rheumatic heart disease.

Salicylate suppressive therapy therefore may be indicated postoperatively for all commissurotomy patients as they have been shown to be helpful when the syndrome appears.

Summary

In the diagnosis of rheumatic fever, the antistreptolysin-O determination is recommended to determine recent streptococcal infection. C-reactive protein determinations are recommended as a test for rheumatic activity.

For prophylaxis, oral or repository penicillin is recommended.

In the treatment of rheumatic fever, salicylates alone, and or, the steroids for carditis are recommended.

Alertness for the "postcommissurotomy syndrome" and its response to salicylates is indicated.

* This is the concluding article of the current series on Rheumatic Fever by Dr. Bernard.

Edited by Andrew M. Babey, M. D., Las Cruces, N. M.

APHORISMS and MEMORABILIA

Miscellaneous Truths and Concepts

(Continued)

11. "Menstruation is often considered very important as a cause of loss of iron from the body, but Moore points out that not more than about 650 ml. of blood are lost in a year by the average woman. A person who gives two blood donations a year may lose a considerably greater amount." *loc. cit.,* Page 65.

12. "A pulse rate of 100 or more is a good index that blood volume is below about 80 per cent; on the other hand, a pulse below 100 does not exclude a blood volume which is well below 80 per cent. Profuse sweating is almost confined to those cases with a blood volume of less than 70 per cent." *loc. cit.,* Page 68.

13. "Again, though the giving of ice-cold blood may cause local discomfort and venospasm, these are trifling considerations in dealing with a severe case of oligaemic shock. The blood should be given straight out of the refrigerator if necessary." *loc. cit.,* Page 69.

Widespread Belief

14. "Unfortunately, there is a widespread belief that the drip-technique is a general safety measure, applicable to all types of transfusion. In the initial treatment of oligaemic shock, blood must be administered in a rapid stream. As a rule the first 500 ml. should be given in five to ten minutes; the second 500 ml. should be given equally rapidly in most cases. These rates of transfusion cannot be attained by simply allowing the blood to run in under gravity through the standard giving needly lying in a peripheral vein. A rise in systolic pressure to 100 mm. of mercury is not indication for stopping the transfusion." *loc. cit.,* Page 69.

15. "Thus, transfusion should be continued not only till the systolic pressure rises to above 100 mm. of mercury, but also until there are signs of the relief of peripheral circulatory failure; that is to say, until the pulse becomes fuller and the extremities warmer. The warmth of the patient's nose is the most reliable guide to skin blood flow." *loc. cit.,* Pages 69, 70.

16. "If an injured person whose blood pressure is low, fails to respond to transfusion, it is usually for one of three reasons. (1) Transfusion may have been begun too late and the patient may be in the condition which has sometimes been described as "irreversible shock." (2) The patient may still be losing blood, so that transfusion is not succeeding in restoring blood to an adequate level. (3) There may be an infection." *loc. cit.,* Page 71.

Immune Antibodies

17. "All that can be done, when a long series of spaced transfusions has to be given to a patient, is to be constantly on the watch for the development of immune antibodies. In practice two steps are recommended. Firstly, before each transfusion, test the patient's serum against the donor's cells, (a) in albumin and (b) by the indirect Coombs tests; secondly, immediately after every transfusion take a venous sample and examine the plasma for free haemoglobin or an increased content of bilirubin." *loc. cit.,* Page 79.

18. "It is suggested that if a patient with a very low haemoglobin concentration has to be transfused, an initial transfusion not exceeding 250 ml. of a concentrated red cell suspension (i.e., the red cells from a single bottle of stored blood) should be given at a low drip rate (taking four to six hours). The transfusion should be stopped immediately if any untoward signs develop. If this transfusion does not provoke such signs, it can be repeated after twenty-four or forty-eight hours. Each transfusion of this amount should produce a rise in haemoglobin of 1.0-1.5 g. per cent." *loc. cit.,* Page 92.

Operation Safe

19. "The operation rarely if ever does any harm to the patient, and probably never increases the risk of gangrene." (concerning arterial embolectomy) Peripheral Vascular Disorders; Peter Martin et al; *Edinburgh and London,* 1956; p. 466.

20. "The neuropathies complicating diabetes not only affect the sensory nerves, but also the sympathetic nerve fibres with the result that vasomotor control is absent and the circulation in the digits does not respond to bodily heating and cooling." *Loc. cit.* p. 376.

21. "Many neurotic illnesses turn out to be atypical depressions and the patient recovers spontaneously after a year or two of waiting; and most neurotic illnesses have high remission rates whatever the type of treatment given." *British Medical Journal;* Sept. 29, 1956; p. 761.

(To be continued)

"POINTERS"

From the Case Records of the Massachusetts General Hospital,* 1953

(Continued)

25. "I do not know how anybody else interprets mid-abdominal tenderness, but I do not even palpate in the midabdomen for tenderness because I do not think anyone can interpret tenderness felt over the great vessels. To me midepigastric tenderness alone means nothing whatsoever. Tenderness to mean anything to me must be on either one side or the other of the midline." *loc. cit.;* p. 249

26. "Small bowel obstruction causes sudden onset of colicky pain; biliary tract disease typically causes a dull pain at first which grows worse and worse; and the physical examination may be entirely negative early in an attack of biliary tract disease." A composite; *loc. cit.;* p. 248

27. "Leaking (abdominal) aneurysm may ooze very slowly and produce intermittent episodes of severe pain, and the patient can go on for months. I know of a patient who went two years before he had another leaking episode." *loc. cit.;* p. 291

28. "In the presence of congenital heart disease the development of signs of focal brain disease with fever indicates brain abscess until proved otherwise; whereas the development of a similar neurologic picture in rheumatic heart disease is more likely to be indicative of subacute bacterial endocarditis with infected embolization to the brain." *loc. cit.;* p. 376

Abdominal Sinus

29. "An abdominal sinus that fails to heal suggests an underlying tumor, an underlying foreign body, tuberculosis and a mycotic infection, of which actinomycosis is the most likely. This may be an oversimplification of the problem, but in a young patient with these x-ray findings I think it is a reasonably inclusive list." *loc. cit.;* p. 414

30. "The diagnosis of unresolved pneumonia is a dangerous one to make. I think an unresolved pneumonia lasting for five months usually turns out to be cancer, tuberculosis, lung abscess or a foreign body obstructing a bronchus." *loc. cit.;* p. 462

31. "It is very easy to confuse the deformity of the duodenum resulting from ulceration and that from prolapse of gastric mucosa or even a gastric polyp into the duodenum; we have made errors both ways in that type of situation." *loc. cit.;* p. 499

32. "We have had 2 or 3 dissecting aortic aneurysms, and a few have been reported elsewhere, in which the dissection bulged so much that it simulated the ordinary saccular aneurysm and was mistaken for a syphilitic or arteriosclerotic aneurysm." *loc. cit.;* p. 573

Thyrotoxicosis

33. "... patients with much thyrotoxicosis rarely have thrombophlebitis and pulmonary infarcts." *loc. cit.;* p. 620

34. "Hypernephroma flicks off many emboli that go through the lungs—one does not have to see snowballs—and into the bones. The bones may be loaded with metastases that do not show in the x-ray films." *lic. cit.;* p. 625

35. "... diffuse osteoporosis is a familiar picture in multiple myeloma and one often does not find any 'punched-out' areas." *loc. cit.;* p. 626

36. "It is not an uncommon sequence for signs of phlebitis in the legs subsequently to develop in patients with clear-cut evidence of pulmonary infarction." *loc. cit.;* p. 736

*We are grateful to Dr. Benjamin Castleman, Editor of "Case Records" and Dr. Joseph Garland, Editor of "The New England Journal of Medicine" for permission to publish these excerpts. They will appear regularly and cover the years 1951 through 1955. — Andrew M. Babey, M. D.

THE PRESIDENT'S COLUMN

The Goose that Laid the Golden Egg

By Celso C. Stapp, M.D., El Paso

Everyone knows that no one chokes the goose that laid the golden egg to get more golden eggs. Also, no one can correct the "choking" by taking a negative attitude saying the choking of the poor goose cannot be prevented.

A comparison can be drawn between the Golden Goose and our present tax situation. The tax payer is certainly laying the golden egg in this good country of ours. The tax payer, you and I, are certainly being hard put these days; and I think that most of us were rather painfully "cooked" on the fifteenth of April.

Wartime Taxes

With the continuance of the wartime taxes the incentive to produce more is rapidly disappearing, and everyone is putting more effort into hunting more deductions than into production.

Being negative about the problem has certainly not straightened out the problem. Let us take a more positive and constructive stand on straightening out this dilemma.

In a recent series of articles in one of our local newspapers great lengths were gone into to show how wives could help their husbands live longer. It was noted that nothing was mentioned about the tax situation and how much worry it has caused the American male, and I am sure the female also.

Depreciated Dollar

Our national taxes are now taking a disproportionate amount of the productive dollar, so that the only thing that can happen is that the dollar will continue to depreciate as has been the case for the past twenty years. Let us study the situation that would occur if only 25 per cent maximum income tax and a maximum of 10 per cent excise tax existed.

Then there would be more money to spend and more money to invest. Employment and wages would increase and there would be more people with more money to tax. Wages would gain their proper proportion of the dollar and thus be more stable. Management and capital would also gain their proportionate amount, giving profit incentive; and investments would increase along with markets, giving a boost in tax volume.

Most important of all though would be that the dollar would stabilize. As the dollar depreciates the government has been taking an even greater proportion of the dollar thus aggravating the situation and making incentive even less.

Giveaways

One other point to be noted is that we have been giving away a heavy proportion of our economy to other countries with nothing in return. This has been done under many varied pretexts. Some of this money has been given away in true charity and good samaritan effort and has met with the approval of most Americans.

A large amount has been given away to try and buy friendship. Friends who have been bought historically and factually have been of no help, and in fact buying friends has begotten hate. Let us be more realistic about our giveaway dollar and not try to support the world. Let us be a part of the world we live in and not its master.

Reductions Asked

The American public has asked for a reduction in the budget and a reduction in the taxes by writing their representatives, which is the proper and democratic process of government. All that we have gotten is a threat postal service will be reduced and other domestic programs cut. Granted, there are many domestic programs that should be cut, and certainly we are for economy in any programs.

We can also name some domestic programs in being that should be abolished and some proposed that would make the tax situation even worse, but there is even more chance of economy in the foreign giveaway program.

Write Your Congressman

Let us continue to write our representatives in government about the tax and budget in a positive manner giving our views on how we feel that it can be cut. This is the only way that we, as the people of America, can change the course of our destiny.

Ours is the only country in the world in which the government is truly by and for the people. If we don't speak and write how we feel and what we want, the government will continue to tax and spend.

Let us not choke the goose that laid the golden egg. For a choked goose will surely end a cooked goose.

MEETINGS

New Mexico Medical Society to Meet in Santa Fe May 15 - 18

Santa Fe, New Mexico, always a charming city and particularly at its best in the Springtime, will host the annual meeting of the New Mexico Medical Society May 15 through 18.

Officers are Dr. Stuart W. Adler, Albuquerque, N. M., President; Dr. Samuel R. Ziegler, Espanola, President-Elect; Dr. James C. Sedgwick, Las Cruces, Vice-President; and Dr. Lewis M. Overton, Albuquerque, Secretary-Treasurer.

Convention headquarters will be in the La Fonda Hotel with registration beginning at 9 a. m. May 15 in the Fireplace Lounge. Scientific sessions will be in the St. Francis Auditorium in the Art Gallery of the Museum of New Mexico. Also meeting there will be the House of Delegates at 1:30 p. m. May 14 and 8:30 a. m. May 15. Scientific exhibits will be located in the North Gallery of the Museum of New Mexico, with technical exhibits in the Santa Fe and Coronado Rooms of the La Fonda Hotel. The registration fee will be $20 for members and guests. Auxiliary members, nurses, medical students, residents and interns may register without fee.

Guest speakers will be as follows:

LAUREN V. ACKERMAN, M.D., Professor of Surgical Pathology and Pathology, Washington University School of Medicine, St. Louis, Missouri.

PHILIP HODES, M.D., Professor of Radiology, University of Pennsylvania School of Medicine, Philadelphia, Penn.

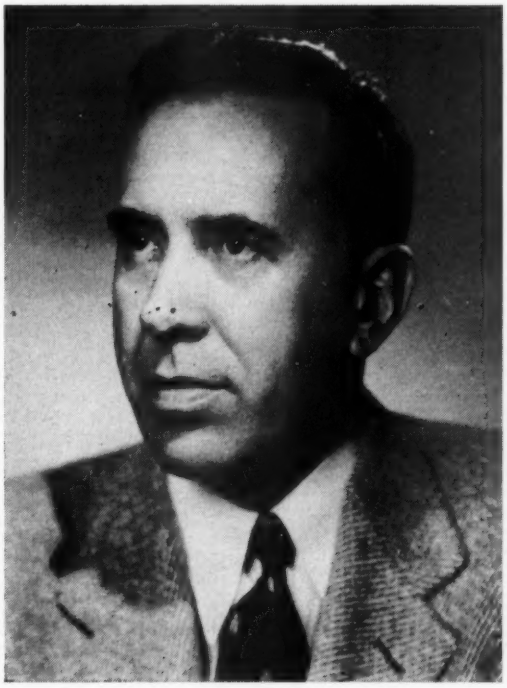
WILLIAM P. LONGMIRE, M.D., Professor of Surgery, University of California at Los Angeles School of Medicine, Los Angeles, California.

I. ARTHUR MIRSKY, M.D., Professor and Chairman of the Department of Clinical Sciences, University of Pittsburgh School of Medicine, Pittsburgh, Penn.

I. SNAPPER, M.D., Director of Medical Education, Beth-El Hospital, State University College of Medicine at Brooklyn, Brooklyn, N.Y.

THEODORE C. PANOS, M.D., Professor of Pediatrics, University of Texas Medical School, Galveston, Texas.

JAMES R. WILLSON, M.D., Professor and Chairman of the Department of Obstetrics & Gynecology, Temple University School of Medicine, Philadelphia, Penn.



Dr. Lauren V. Ackerman

Dr. Philip J. Hodes

SCIENTIFIC PROGRAM

Dr. William P. Longmire

Wednesday Afternoon — May 15.

Session Chairman - Stuart W. Adler, M.D., President, New Mexico Medical Society.

1:30 P.M.
Invocation: Reverend Henry F. Seaman, Church of the Holy Faith, Santa Fe.

Welcome: Leo T. Murphy, Mayor, Santa Fe.

Greetings: R. C. Derbyshire, M.D., President, Santa Fe County Medical Society.

Inaugural Address: Samuel R. Ziegler, M.D., President-Elect, New Mexico Medical Society.
"This Changing Environment".

2:15 - 3:15 P.M.
"Lupus Erythematosis" — I. Snapper, M.D.

3:15 - 3:45 P.M.
Intermission

3:45 - 4:45 P.M.

Clinical Pathological Conference.

7:00 P.M.
Stag Smoker and Buffet for Physicians and Exhibitors, La Posada.

Dinner for the Ladies — Bishop's Lodge.

Thursday Morning — May 16

Session Chairman: Lewis M. Overton, M.D. Secretary-Treasurer, New Mexico Medical Society.

8:00 - 9:00 A.M.
Movies

9:00 - 10:00 A.M.
"The Indiscriminate Use of Contrast Media".
Philip Hodes, M.D.

10:00 - 10:30 A.M.
Intermission

10:30 - 11:30 A.M.
"The Role of Insulinase and Insulinase Inhibitors in the Etiology and Treatment of Diabetes Mellitus".
I. Arthur Mirsky, M.D.

11:30 A.M. - 12:30 P.M.
"Aids in the Diagnosis of Tubal Pregnancy".
James R. Willson, M.D.

12:30 - 2:00 P.M.
Organization Luncheons

Thursday Afternoon — May 16

Session Chairman: James C. Sedgwick, M.D. Vice-President, New Mexico Medical Society.

Dr. I. A. Mirsky

2:00 - 3:30 P.M.
Panel Discussion
Subject: "Gastrointestinal Bleeding"
Moderator: Philip Hodes, M.D.
Participants: Doctors Ackerman, Longmire, Mirsky, Panos and Snapper.

3:30 - 4:00 P.M.
Intermission

4:00 - 5:00 P.M.
Clinical Pathological Conference

7:00 P.M.
Cocktails and Dinner Dance — La Fonda
Obtain Tickets at Reservation Desk,
$7.50 per person.
(Formal Dress Optional)

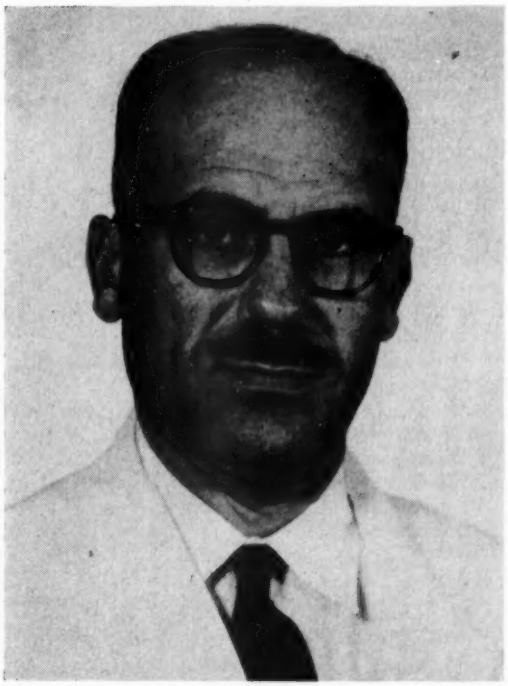
Friday Morning — May 17.

Session Chairman: R. C. Derbyshire, M.D.
President, Santa Fe County Medical Society.

8:00 - 9:00 A.M.
Movies

9:00 - 10:00 A.M.
"Practical Problems in Surgical Pathology"
Lauren Ackerman, M.D.

10:00 - 10:30 A.M.
Visit Exhibits.



Dr. T. C. Panos

Dr. I. Snapper

10:30 - 11:30 A.M.
"The Nephrotic Syndrome"
Theodore C. Panos, M.D.

11:30 A.M. - 12:30 P.M.
"The Management of Diverticulitis of the Colon"
William P. Longmire, M.D.

12:30 - 2:00 P.M.
Organization Luncheons

Friday Afternoon — May 17

Session Chairman: Samuel R. Ziegler, M.D.
President-elect, New Mexico Medical Society.

2:00 - 3:30 P.M.
Panel Discussion
Subject: "Complications of Diabetes Mellitus"
Moderator: Isadore Snapper, M.D.
Participants: Doctors Longmire, Mirsky, Panos and Willson.

ORGANIZATION LUNCHEONS

New Mexico Obstetrical and Gynecological Society — Thursday, May 16, 12:30 P.M., New Mexican Room, La Fonda.
New Mexico Orthopedic Society — Thursday, May 16, 12:30 P.M., La Posada.
New Mexico Pediatrics Society — Friday, May 17, 12:30 P.M., La Posada.

Dr. James R. Willson

Association of Radiologists and Pathologists—Friday, May 17, 12:30 P.M., New Mexican Room, La Fonda.

Trudeau Society — Friday, May 17, 12:30 P.M., La Posada.

American College of Surgeons—Organizational Meeting—Thursday, May 16, 12:30 P.M., La Posada.

The New Mexico Heart Association will hold a scientific meeting in Santa Fe, May 17 - 18, 1957, at St. Francis Auditorium (Art Museum).

Program

Friday - May 17

8:00 P.M.
"The Artificial Kidney"
W. J. Kolff, M.D., Research Division, Cleveland Clinics.

Saturday - May 18

9:00 A.M.
Symposium on Coronary Artery Disease.

2:00 P.M.
Symposium on the Artificial Heart.
Guests: Denton A. Cooley, M.D., Baylor University.
W. J. Kolff, M.D.
Three others to be announced.

New Mexico Ophthalmological Society to Meet in Santa Fe

The annual meeting of the New Mexico Ophthalmological Society will be held in Santa Fe, May 11 and 12, 1957.

Guest speaker will be Dr. Jerome W. Bettman, Associate Clinical Professor of Ophthalmology (Surgery) at Stanford University. Subjects to be discussed are as follows: Complications of Cataract Extraction — Handling of Complicated Cataract; Differential Diagnosis of Dark Lesions of Posterior Fundus; Aphakic Refraction and Use of High Power Lenses; Congenital Glaucoma, Diagnosis — Treatment; Experimental Studies — 'Ocular' Vasodilators; and Surgery of Trauma and Intraocular Foreign Bodies.

ORIGINAL ARTICLES

Prevention and Treatment of Blood Transfusion Reactions (Concluded)* †

By Marvin J. Friedenberg, M.D.**
Former Intern, New England Center Hospital, Boston

Incompatible Blood Transfusion

Human errors, either technical, clerical, or administrative, are responsible at present for the majority of incompatible transfusions, with rare instances of isoimmunization causing most of the other reactions.[21,52,110]

Red Blood Cells. Any or all of the signs and symptoms of a hemolytic transfusion reaction may be absent following the infusion of incompatible blood.[10,111] Clinical reactions may vary in severity from so slight as to be overlooked to rapidly fatal. However, they usually occur with sufficient intensity and distinction to make the diagnosis suspect, if not absolute.

The first symptoms usually appear during[112] or immediately following[1] the completion of transfusion. There is a more or less constant sequence or pattern of development in the clinical manifestations of an incompatible transfusion.[112]

Occasionally, immediate circulatory collapse producing the signs and symptoms associated with shock may occur, the prognosis being extremely poor if this is the case.[21,52]

More commonly, however, the reaction is less lethal,[21,52,112] the first symptom being a chill which may be violent[1,32] and may last from a few to 45 minutes.[52] This may be accompanied by a fever[21,32] as high as 104°F,[10,43] usually reaching a peak in 1-2 hours and dropping to pretransfusion levels within 4-8 hours.[52]

Substernal Pain

Substernal pain or a sense of precordial oppression or constriction may then develop, followed by a feeling of fullness in the head, headache, and a tingling sensation in the hands and feet.[1,10,32,52,112,113]

Pain in the lumbar region[10,21,52,112] bilaterally, which may be perceived also in the groins and radiating down the legs, commonly occurs next. This may be followed by flushing of the face, distention of neck veins, and the development of anxiety and restlessness.[10,52,112]

Cough with shortness of breath,[112] cyanosis[52] and rapid, shallow breathing[1] may then occur, followed by nausea,[10,32] vomiting,[10,32,112] and collapse[112] or prostration.[1]

The latter is characterized by all of the manifestations of the shock state, including tachycardia[10] with a rapid, thready pulse[1] and hypotension[10,52] with a fall in the systolic blood pressure.[1]

It has been stated that the reaction resulting from the transfusion of incompatible blood may be very similar to that following the infusion of contaminated blood, but in the former instance shock and orthostatic hypotension are not such outstanding features of the reaction.[32]

Hemoglobinemia[10] and hemoglobinuria[10,21] may then precede a state of partial or complete urinary suppression,[1,10,21,112] often accompanied by jaundice.[1,112]

Renal Failure

The stage of renal failure may be characterized by the development of stupor,[52,112] edema, convulsions, coma, and even death[32,112] in uremia.[1] A burning pain in the vein above the transfusion needle[10] and muscle cramps[52] may also be felt.

The shortened survival of incompatible red cells after their infusion makes it doubtful that a recipient will receive much benefit from a transfusion resulting in a reaction,[114] the more severe reactions probably being associated with a 50 per cent less effective increase in the recipient's hemoglobin concentration.[115]

The primary signs and symptoms enumerated among the above effects are usually delineated from the manifestations that occur secondarily as a result of or in association with renal failure. When a reaction is characterized by the development of primary manifestations only and then to a relatively mild degree, it may be termed a "minor" one,[116] 25 per cent of incompatible reactions being of this nature. They may be mistaken for pyrogenic reactions.[52]

Hemolytic Transfusion

The remaining 75 per cent of hemolytic transfusion reactions are complicated by hemoglobinemia, hemoglobinuria, and usually renal failure. These statistics are based on a report[52] of 37 incompatible blood transfusions, 28 of which precipitated a major

*This is the last of three sections of this article.
**At present Resident in Medicine, Crace-New Haven Hospital, New Haven, Conn.
†This article published by permission of the Tufts-New England Medical Center Bulletin.

reaction, 2 of these patients dying in shock, 2 developing no sequelae, and 24 (or 65 per cent of the total) developing acute renal failure.

In other words 26 out of 28 or 92 per cent of those who developed hemoglobinuria and survived the immediate reaction subsequently developed renal failure. It has been estimated elsewhere,[32] however, that less than 50 per cent of patients undergoing a hemolytic transfusion reaction develop acute renal failure.

Clinical Course

The clinical course of patients with acute renal failure has been divided into three phases[113,117,118]: the shock phase, the phase of renal insufficiency, and the recovery phase. The first, or shock, phase is of short duration, the characteristic hypotension lasting no longer than a few hours, unless it is complicated by previous blood loss.[52]

Death does not usually occur during this phase,[1] which is encountered to varying degrees in 55 per cent of those experiencing a major reaction complicated by renal failure.[52]

Second Phase

The second, or renal insufficiency, phase rarely becomes manifest before 12 hours after the transfusion is begun[1] but usually develops within 24 hours and is characterized by oliguria with fixation of the specific gravity at 1.010 (or occasionally complete anuria), azotemia, and plasma electrolyte changes.[52]

This phase is usually ended within 5-12 days of its onset by a profuse diuresis of from 3-12 liters of urine per day,[52] containing progressively decreasing quantities of albumin, casts, and red and white blood cells.

It is claimed[112] that the casts are one of the last abnormalities to disappear during the recovery phase. The extent and duration of the oliguria is the most accurate method of clinically evaluating the severity of renal failure.[52,112]

The azotemia, which persists until death or recovery, may reach a height of 50-100 mg per cent of blood urea within 24 hours and a plateau of 200-500 mg per cent in 5-9 days, but is of no importance in estimating the degree of renal failure.[52,112]

The plasma electrolyte changes that occur include the accumulation of organic acids, sulfate, and phosphate, resulting after about 5 days in the development of acidosis with a decreased carbon dioxide combining power of plasma.[1,52]

Also decreased are the Na+ and Cl− concentrations of plasma, occurring through a shift of these ions intracellularly, a dilution of them extracellularly by excessive fluid intake, or a loss of them into urine or feces.[52] This loss of the Na+ and Cl− ions is aggravated, of course, by vomiting, diarrhea or ex-excessive sweating.

Recovery Phase

The third, or recovery, phase is characterized by the profuse Na+, Cl−, and K+-rich diuresis mentioned and a 1-6 month (often 3-4 week) convalescent stage ending in the complete return of renal function to its pretransfusion state.[52] The clinical course of the patient correlates well with the morphologic changes observed in the renal parenchyma, from the tubular degeneration and focal necrosis observed during the initial days of the reaction through the stages of progressive and finally complete regeneration.[52]

The Hemorrhagic Syndrome

There are numerous reports[8,52,111,116,119-123] in the literature commenting on the hemorrhagic tendency which may develop following the transfusion of incompatible blood. This complication usually manifests itself by profuse, persistent oozing of blood from any site in which the integrity of vascular walls has been interrupted either prior to or during the course of a surgical procedure.

Bleeding may occur from the site of a needle or venipuncture in the skin, either internal or external operative wounds, mucous membrane of the gastrointestinal tract, including the gums.[52] The most exasperating feature of this bleeding tendency is its extreme intractability.

Four Circumstances

It has been noted[119] that four circumstances are invariably present in association with this hemorrhagic syndrome. First, the reaction is precipitated by the transfusion of incompatible blood.

Secondly, the infusion of a relatively large volume, at least 250 cc, of incompatible blood is usually required to produce the reaction.[52,119]

Thirdly, a fresh surgical wound is usually present which permits gross observation of the bleeding. Finally, evidence of hemolysis[119] and renal failure[52] is usually present, indicating that a major reaction has occurred.

The hemorrhagic syndrome developed either during or shortly after the completion of the transfusion in 25 per cent of 37 patients receiving infusions of incompatible blood, one out of the nine patients dying.[52]

The greater the area of body dissected, the greater is the chance that exsanguinating hemorrhage will occur.[119]

It is warned[119] that the bleeding of this syndrome should not be confused with either the "spontaneous thrombocytopenia" which may occur during operation or the "bleeding of cyclopropane anesthesia."

The former is characterized by its response to splenectomy, as well as by bleeding of a brighter red color. Although progress is being made in this direction the exact cause of the hemorrhagic state is unknown at present.[52]

Diagnosis

The diagnosis of a hemolytic transfusion reaction is based upon accurate laboratory tests in addition to careful clinical observation for the characteristic signs and symptoms previously described.

Since nearly all fatal transfusion reactions become clinically manifest within the first five minutes of infusion of the incompatible blood, it is mandatory for a qualified person to be at the recipient's bedside at least during this crucial period.[10] Others[112] advise that a trained individual should observe the infusion from beginning to end.

The presence of hemolysis, of course, provides an excellent clue as to the nature of a transfusion reaction. A minimum of 10 mg of free hemoglobin per 100 cc of plasma is generally necessary before the characteristic wine-red color imparted to the plasma is grossly visible following sedimentation of the remaining cells.[8]

Three methods of blood collection in testing for hemoglobinemia have been described. After the application of a tourniquet, one technique involves the centrifugation of blood collected directly into a dry test tube from a dry needle (no syringe) which has been inserted into a vain.

Another method involves the centrifugation of citrated blood collected via a needle and syringe previously moistened with saline and a third technique calls for the withdrawal of the blood in an oiled syringe.[32] If the serum after any one of these tests is pink, the presence of hemolysis is indicated.

Dark Brown Color

Also characteristic of a hemolytic transfusion reaction is the presence of hemoglobin in the urine, which imparts to it a dark brown, almost black, color.[32]

Once an incompatible transfusion reaction is suspected or proven, immediate microscopic urinalysis should be performed and repeated at frequent intervals.

In addition, calculation of the fluid intake and output, with catheterization if necessary, should be made; blood chemistry determinations should be obtained including urea and nonprotein nitrogens, CO_2 combining power, icteric index, and chloride and protein levels as indicated.[112]

Meanwhile, the offending donor blood from the bottle (not the pilot tube) should be re-identified with respect to the ABO and D antigens and a fresh sample of the recipient's blood should be retyped with respect to these systems and recross-matched with the donor's blood.[10]

If these tests confirm the original type and cross-match tests, the life history of the suspect donor blood should be reviewed completely from its collection to infusion.[10] Particular attention should be paid to the detection of partially destroyed red cells in the sediment of the bottled blood, which may have been present in the banked blood prior to the transfusion.[10]

The presence of partial destruction of the red cells may not always be reflected in the color of the supernatant[124] and abnormal blood unwittingly may have been given. Also, the Coombs test should be applied to the recipient's blood to detect any unusual agglutinins which may be present.[10]

Prophylaxis

It has been stated that "all fatal hemolytic reactions caused by blood group incompatibility are absolutely avoidable."[125] The general unavailability of typing sera capable of identifying many of the less antigenic factors makes it impossible for all practical purposes to prevent the development of *sensitization* to these factors in recipients of blood transfusions.[125]

However, once sensitization of significant degree has occurred, the utilization of a sensitive cross-match test should eliminate the threat of a serious *reaction* by ensuring that only compatible blood is employed in future transfusions.[125]

Prophylaxis involves meticulous attention to five general points in the selection, preparation, and administration of blood.

They include efficient and qualified personnel operating in a well organized system, proper selection of the donor, careful ABO and Rh typing, adequate cross-matching studies, and finally the utilization of specialized techniques and the performance of certain unusual procedures when indicated.

Personnel

It has become increasingly apparent that the one factor seemingly most amenable to correction, namely the occurrence of clerical inaccuracies and administrative mistakes, is responsible for the majority of reactions due to incompatible blood transfusions.[38]

Typing or cross-matching errors may result in a hemolytic transfusion reaction which may be fatal[125] Improper labeling of bottles and failure to read labels accurately, insufficient identification of patients, especially those with similar names, undue haste, personnel poorly trained with regard to their obligations and responsibilities and unfamiliar with their duties in the particular routine of the blood bank, an inadequately organized blood transfusion service, and a host of similar failings contribute significantly to the frequency of incompatible transfusions.[10,38,110]

A frequent turnover of transfusion service personnel and a multiplicity of personnel involved in handling a given transfusion also seem to increase the incidence of incompatible transfusions.[62]

Selection of Donor

There is an increased risk thrust upon a female recipient of a blood transfusion, if her husband is the

donor.[10,125] She may have been sensitized during previous pregnancies to antigenic substances lacking in her red cells but present in her husband's and inherited from him by their offspring. The antibodies produced in the female by the passage of these factors across the placental barrier may then precipitate a hemolytic reaction upon the subsequent infusion into her of her husband's blood. Also, the transfusion itself could act as the sensitizing event, causing the development of erythroblastosis fetalis during subsequent pregnancies.

ABO and Rh Type

The common denominator of the many varieties of blood typing techniques is the presence or absence of agglutination of red blood cells by various typing reagents.[10]

The latter are antisera containing antibodies which may be obtained from human and animal sources and are distributed by different manufacturers.[10]

Each manufacturer outlines exact instructions for the proper use of the particular reagent he dispenses, including the specification of precise conditions of pH and temperature[10] under which it should be used.

Each product is specially designed to detect a particular antigen, although many different antigens are, of course inevitably present on the surface of the red cells to be typed.

Unless the instructions for use of the antisera are meticulously followed, the presence of substances other than those which the reagent is designed to detect will interfere with the test.[10]

Red Cells

Red cells are typed for the presence or absence of A, B, and D antigens, thus providing information concerning the identification of the cells with respect to the ABO and Rh systems, which, of course, are the systems most frequently involved in clinically significant transfusion reactions.

The major typing test consists of admixing the proposed recipients cells (antigen) individually with the three antisera (anti-A, anti-B, and anti-D antibody) commercially provided and then observing for agglutination. This classifies the recipient's cells into one of eight possible categories or blood types:

	anti-A	anti-B	anti-D	Type
#1	—	—	—	O Rh neg.
#2	+	—	—	A Rh neg.
#3	—	+	—	B Rh neg.
#4	+	+	—	AB Rh neg.
#5	—	—	+	O Rh pos.
#6	+	—	+	A Rh pos.
#7	—	+	+	B Rh pos.
#8	+	+	+	AB Rh pos.

+ Indicates agglutination present
— Indicates agglutination absent

It is recommended[10] that the blood type obtained by the above procedure be checked by performing a "back typing test" designed to detect the naturally occurring anti-A and/or anti-B antibodies universally present in O, A, or B individuals. The test consists of mixing the proposed recipient's *serum* (antibody) with red cells of known groups (antigen).

Since it is inconceivable that an individual could possess antibodies in his serum to an antigen present on his red cells, his blood type may be determined, in effect, by determining the nature of the naturally occurring anti-A and anti-B antibodies in his blood stream.

This "back typing" procedure cannot, of course, be used to check the Rh type of the proposed recipient, because antibodies to the D antigen are not naturally ocurring and are present in an individual only through sensitization by previous transfusion or pregnancy.

Recommendation

Therefore, it is recommended that the Rh type of the individual be checked by repeating the usual Rh typing test with two modifications namely, utilization of another typing technique and employment of Rh typing serum obtained from a different manufacturer.[10]

The incubation of cells and serum for proper grouping and cross-matching should take two hours under ordinary circumstances and at least 15 minutes in an emergency, but never 5 minutes as is sometimes the routine in busy laboratories.[4]

Finally, it is advised[10] that a Coombs test be performed on red cells that are apparently Rh negative after exposure to anti-D typing serum, because the presence of the D^u variant will be detected by this procedure.

Once compatibility with respect to the three major factors (A, B, and D) is thus assured, routine typing for the other clinically less significant factors becomes impractical,[126] reactions due to the latter being avoided for all practical purposes by accurate cross-matching tests.[71]

Cross-Match

Once the blood types of the proposed recipient and prospective donor are determined, it then becomes mandatory to cross-match the bloods involved to detect any incompatibilities resulting from the presence of blood group antibodies to any one of the factors not yet tested for.

Three separate and distinct cross-match tests are performed for each transfusion[126]: the *major,* in which recipient's serum and donor's cells are mixed to detect antibodies present in the recipient, if he be sensitized to some blood group substance present on the donor's cells; the *minor,* in which recipient's cells are mixed with donor's serum to detect antigens present on the cells of the recipient that may react with antibodies in the serum of the donor; and, finally, the major test for abnormal cold agglutinins in which

the recipient's serum is mixed with the donor's cells and placed in the refrigerator to detect reactions that may occur only at lower temperatures.

Many Techniques

Many techniques are available for the performance of the cross-match procedures, but none can compare in sensitivity to the Coombs test to which ultimate recourse is taken in challenging situations.[125,127]

It is capable of detecting blood which may be incompatible due to previous sensitization of the proposed recipient through pregnancy, as well as blood transfusion.[125] The Coombs antiglobulin test is performed by incubating the recipient's serum and the donor's cells and adding, after the proper wash, Coombs serum.

The presence of antibodies of any form in the recipient's serum that might be active against the donor's cells is indicated by the development of agglutination upon the addition of the Coombs serum.[52]

Coombs Test

It is recommended[38] that the Coombs or proteolytic enzyme test always be employed prior to administering Rh positive blood to an Rh negative recipient in order to detect previous sensitization to an Rh factor. The presence of antibodies such as anti-Fy^a, anti-K and anti-Jk^a can only be detected by the indirect Coombs test, and consequently the determination of immunization to these factors can only be made by means of this method.[10,128]

It is also recommended that the Coombs test, rather than the other agglutination tests, be employed on the mother's serum to detect the offending antibodies prior to the exchange transfusion of an erythroblastic infant. Ideally the indirect Coombs test should be performed on a mixture of the recipient's serum and donor's cells prior to all proposed transfusions and at least on all those patients who previously had been recipients of multiple transfusions.[128]

It must be remembered that theoretically a previous incompatible transfusion may remove most, if not all, of the recipient's circulating antibodies, leaving none to react with the donor's cells during the Coombs test and giving a falsely negative test result.[52]

Treatment

The treatment of an incompatible blood transfusion reaction[129,130] may be conveniently divided into three phases of therapy corresponding to the three phases of reaction already described. It must be emphasized, however, that treatment must be individualized, being directed toward the particular needs of each patient, and for the most part conservative.[52]

The first, or shock, phase of the reaction is best treated by immediately discontinuing the infusion and, if necessary, administering additional compatible blood transfusions, employing the indirect Coombs procedure for the primary cross-match of the donor's blood.[10,52]

This therapy should only be undertaken, however, after the patient's apprehension is allayed by appropriate sedation and reassurance and after the incompatibility responsible for the reaction has been identified.

In addition, strong efforts should be made to control any concomitant blood loss which may be contributing to the peripheral circulatory failure produced by the incompatible blood.[52]

Multiple Transfusions

Mulitple transfusions may be required to treat the shock and anemia characteristic of a severe reaction, an attempt being made to maintain the patient's hemoglobin concentration at no less than 10 gm.[52]

Although blood of the correct type may be given following an incompatible transfusion reaction it is necessary to keep a wary eye out for the presence of agglutinins to this type previously infused and being available to cause a reaction.

Because of this possibility, washed Group O cells resuspended in saline may be used or Witebsky's substances may be added to Group O blood of low anti-A and B titer.[7]

Hemorrhagic State

The hemorrhagic state may be an extremely pressing therapeutic problem during the first phase of an incompatible blood transfusion reaction.

The intravenous infusion of toluidine blue has been suggested as a therapeutic agent for this syndrome,[131] and it has been used with encouraging results in both dogs and humans.[52,119] This therapy has been found[119] to be particularly effective in the presence of elevated protamine titrations.

Since the hemorrhagic state is somewhat similar to the bleeding observed in certain known immunologic conditions, a therapeutic trial of ACTH has also been suggested in the management of this condition.[52]

Treatment of the second (renal insufficiency) and third (diuretic) stages of the incompatible blood transfusion reaction are of great importance, but cannot be included in this discussion.

Platelets. The observations thus far made seem to demonstrate that there are different platelet, as well as red blood cell, types, and that an immunologic thrombocytopenic blood factor probably exists which may be responsible for the development of isoimmunization to platelets as a consequence of either pregnancy or an "incompatible platelet" transfusion.[132]

Plasma. Recently, the infusion of sterile plasma was found[133] to be responsible for the production of

a transfusion reaction characterized by chills, fever, pains in various locations (head, abdomen), nausea, vomiting, intestinal hyperperistalsis (diarrhea), and cyanosis.

This phenomenon has been observed in patients with hemolytic diseases, terminal carcinoma, and paroxysmal nocturnal hemoglobinuria and is always followed by a hemolytic crisis.

It is suggested[134] that this may be nothing more than another instance of the nonspecific type of reaction found in anaphylactic and peptone shock, or following the intravenous administration of foreign proteins or incompatible blood, or following the injection of iron compounds in susceptible individuals, or during the hemolytic paroxysms of cold hemoglobinuria, favism, and blackwater fever.

Result of Embolism

It was postulated[134] that the reaction might be the result of embolism and the method by which the latter could produce this symptom complex was suggested. It was claimed that the blood became hypercoagulable and that an attempt at intravascular coagulation possibly occurred, this being based on the thrombocytopenia and decreased prothrombin activity and fibrinogen concentrations that were found. These phenomena were followed by an intense fibrinolytic activity in the plasma accompanied by the appearance of an unidentified anticoagulant.

References

110. Nicholson, M.J. Hemolytic transfusion reactions. *Anesthesiology* 9:345, 1948.
111. Wiener, A.S. The Blood Groups and Transfusion. 3rd edition. Charles C. Thomas, Springfield, Illinois, 1943.
112. Drummond, A.C., and Mitchell, A.C. Lower nephron nephrosis and management of transfusion anuria. *Am.J.Surg.* 81:629, 1951.
113. Muirhead, E.E. Small, A.B., Haley, A.E., and Hill, J.M. Peritoneal irrigation for acute renal damage following incompatible blood transfusion. *J.Lab. & Clin.Med.* 32:988, 1947.
114. Klein, S.J., Konwaler, B.E., and Mahany, W.K. Rh sensitization following repeated transfusions of Rh positive blood into Rh negative recipients. *Am.J.Clin.Path.* 21:399, 1951.
115. Heard, J.P. Reaction to blood transfusion. *J.M.A.Georgia* 37:212, 1942.
116. Wiener, A.S. Intragroup incompatibility with respect to Rh blood factors as a cause of minor hemolytic transfusion reactions. *J. Lab. & Clin.Med.* 33:985, 1948.
117. Muirhead, E.E., Haley, A.E., Haberman, S., and Hill, J.M. Acute renal insufficiency due to incompatible transfusion and other causes with particular emphasis on management. *Blood Supp.* 23:101, 1948.
118. Muirhead, E.E., and Hill, J.M. The treatment of acute renal insufficiency. *Surg.,Gynec. & Obst.* 87:445, 1948.
119. Friesen, S.R., Harsha, W.N., and McCrossbey, C.H. Massive generalized wound bleeding during operation with clinical and experimental evidence of blood transfusion reactions. *Surgery* 32:620, 1952.
120. Astrowe, P.S. Hemolysis following transfusion. *J.A.M.A.* 79: 1151, 1922.
121. Levene, E.C., and Segall, H.N. Post-transfusion reactions alterations in blood after ether anesthesia and after blood transfusions. *Surg.,Gynec. & Obst.* 35:373, 1922.
122. Parr, L.W., and Krischner, H. Hemolytic transfusion fatality with donor and recipient in the same blood group. *J.A.M.A.* 98:47, 1932.
123. Abramson, M. Hemolytic transfusion reaction with death. *Lancet* 55:805, 1935.
124. Grove-Rasmussen, M., and Soutter, L. Hemoglobin content of plasma of banked blood and of serum of patients with transfusion reactions. *Am.J.Clin.Path.* 20:434, 1950.
125. Allen, F.H., Jr. Importance of blood groups in laboratory clinical medicine. *New England J.Med.* 247:379, 1952.
126. Stefanini, M. *Lecture given to 2nd year students at Tufts University School of Medicine, 1953* (January 6).
127. Dodge, O.G. A comparative study of direct watching technics in blood transfusion. *J.Clin.Path.* 5:102, 1952.
128. Hutcheson, J.B., Haber, J.M., and Kellner, A. A hazard of repeated transfusions. Hemolytic reaction due to antibodies to the duffy (Fya) factor. *J.A.M.A.* 149:274, 1952.
129. Borst, J. G. G. Protein katabolism in uraemia. Effects of protein-free diet, infections and blood transfusions. *Lancet* 1:824, 1948.
130. Bull, G. M., Jaekes, A. M. and Lowe, K. G. Conservative treatment of anuric uraemia. *Lancet* 2:229, 1949.
131. Allen, J.G., *et al.* Abnormal bleeding. *J.A.M.A.* 139:1251, 1949.
132. Sprague, C.C., Harrington, W.J., Lange, R.D., and Shapleigh, J.B. Platelet transfusions and the pathogenesis of idiopathic thrombocytopenic purpura. *J. A. M. A.* 150:1193, 1952.
133. Dameshek, W., and Weber, J. Transfusion reactions to plasma constituent of whole blood. *Blood* 5:129, 1950.
134. Crosby, W.H., and Stefanini, M. Pathogenesis of the plasma transfusion reaction with special reference to the blood coagulation system. *J.Lab. & Clin.Med.* 40:374, 1952.

Clinical Note from Grand Rounds

These notes are abstracts of opinions expressed by staff members during case presentations at the Friday Grand Rounds of the Pratt Diagnostic Clinic — New England Center Hospital.

Carcinoid tumors are derived from chromaffin cells of the intestinal tract. Carcinoid tumors with metastases to the liver (presumably because of the production and release of serotonin [5-hydroxytryptamine] by the tumor) occasionally give rise to a characteristic syndrome.

The syndrome is manifest by peculiar cutaneous flushes and cyanosis, chronic diarrhea, respiratory distress, and valvular disease of the right heart (pulmonic stenosis and tricuspid insufficiency).

Hypotension occurs during the severe flushes. The diagnosis is confirmed by the finding of increased amounts of serotonin and five-hydroxyindole compounds in the blood.

There is no effective treatment for this disorder, but the prognosis is much better than in patients with hepatic metastases from other neoplasms.

Myxoma of the Left Atrium: Report of a Case

By Kurt Lekisch, M. D., Midland, Texas

Myxoma of the heart has been diagnosed before death only on rare occasions. The disorder is usually mistaken for mitral stenosis.

The patient, a 54 year old white homemaker, had a history of several previous illnesses which the author suspects may have coexisted with the malady that led to her death. On the basis of clinical, roentgenologic and electrocardiographic observation, a diagnosis of lymphatic spread of metastatic carcinoma throughout both lung fields, originating from adenocarcinoma of the right breast, was entertained.

Other possibilities were thought to be collagen disease or progressive subacute interstitial pulmonary fibrosis. No cardiac murmur could be heard even in the left lateral recumbent position. Low grade fever and anemia remained unexplained. The congestive failure was refractory to the usual therapy.

Autopsy Report

At autopsy the heart weighed 323.5 gm. The left atrium contained a lobulated grayish tumor mass measuring 5.5 cm. in length by 4 cm. in width by 1.2 cm. at the base. The base of the tumor was attached to the upper edge of the foramen ovale. Section from the tumor revealed heavy fibrosis with formation of cartilage and even some calcification. In these areas there was also evidence of old hemorrhage.

In the periphery, the tumor formed a loose network of elongated, spindle-shaped cells. Between these cells, there was matrix of homogenous metachromatic material suggesting the presence of large amounts of mucin.

The controversy among pathologists as to whether the myxoma is a true neoplasm or simply an organized thrombus was weighed. The author believes that this tumor arose from a definite location in the endocardium and had a characteristic gross and microscopic appearance of a true neoplasm.

Murmurs Absent

The absence of any murmurs suggested that the obstruction of blood flow in the left atrium occurred at the orifices of the pulmonary veins rather than at the mitral valve. The association of low grade fever and anemia with myxoma of the heart is an extremely interesting one and the possible explanation for the systemic reaction might be the presence of the tumor itself.

Neither conventional roentgenography nor electrocardiographic tracings have been helpful in establishing the diagnosis of atrial myxoma. Cardiac catheterization data from a report revealed the pulmonary capillary pressure to be elevated. However, intracavitary tumors have been diagnosed in life by means of angiocardiography.

Characteristic persistent filling defects in an atrium were noted in all cases. Recent advances in surgical technique and the use of hypothermia or heart-lung machine have made it possible to remove intracavitary tumors successfully.

Mechanical Interference

In the case under discussion, the symptoms and signs were thought to have resulted from mechanical interference with entrance of blood into the left heart and to back pressure in lungs and right heart. These findings were coupled with persistent progressive cardiac insufficiency, entirely unresponsive to treatment. Intracardiac tumor should have been suspected.

By review of the literature, angiocardiography was found a specific aid to diagnosis in such cases and is urgently advised since this type of tumor now can be successfully removed and represents one form of curable heart disease.

Post Office Box 852

Do Ovaries Cease to Function at the Menopause?

By Joseph B. Raddin, M. D., Phoenix

There is presently, and there has been for some years past, considerable discussion whether, during pelvic operations on a woman over forty years of age, she would or should not be castrated as a routine procedure.

An argument often given in favor of removal of normal ovaries is that since they have stopped, or soon will stop, functioning they are, nevertheless, potential hazards as the site of future carcinoma.

The removal of normal tissues and organs is seldom felt to be justified by hospital tissue committees and removal of normal ovaries should be no exception.

There is no doubt that carcinoma of the ovaries is more common after forty years of age. But is it common enough to warrant wholesale removal of grossly normal appearing ovaries as a routine procedure? Castration of women in their forties causes a great deal of ill health due to the hormone imbalance induced which is often not of short duration, nor mild, nor readily relieved by estrogen medication. Is this ill health adequate compensation for the extremely rare possibility of primary ovarian carcinoma?

There is considerable doubt that ovaries actually do cease entirely to function even, in some instances, many years following the onset of the amenorrhoea of the natural menopause. How can ovarian function at a low level be demonstrated?

Inexpensive Method

Lacking accurate assays for blood content of estradiol and progestin, and the doubtful clinical value of costly assay of their urine excretion compounds, an inexpensive, readily available method of assay may prove helpful. The Papancolaou method of staining vaginal and cervical tissue cells should be a reliable index of ovarian function and it is suggested as a convenient and inexpensive manner in which to study this problem.

During routine physical check-ups of women, it is an easy matter to take material for a "Pap" smear. Whether or not the staining and interpretation is performed by the examining physician, it is easy for the laboratory to express an opinion whether or not the cells show estrogen effect during the search for possible evidence of malignancy.

Younger Than Age

Physicians as well as men and women are aware that some women appear and act years younger than their actual age. It was thought there might be some correlation between the persistence of estradiol effect noted on the stained vaginal smear preparations in these youthful appearing women in their sixties. Similarly, there might well be some relation between lack of ovarian hormone effect as disclosed by vaginal smear staining in those women who appear older than their actual age justifies.

My preliminary impression is that, at least in these active, young-looking, menopausal women, there is considerable secretion of ovarian hormones although obviously at a level insufficient to induce menstruation. Removing the ovaries from such a woman could not avoid inducing annoying menopausal symptoms and ill health even though she is in her fifties or sixties at the time of operation. Such ill health following castration is a common clinical fact encountered in medical practice which these women do not enjoy.

Possible Contribution

It does not necessarily follow that in those women whose ovaries appear at operation to be atrophic, because there are no follicle cysts visible, that even these ovaries no longer contribute something worthwhile to that woman's health and well being. It seems preferable not to remove normal atrophic ovaries routinely when the opportunity presents itself, solely on the perhaps false assumption that such ovaries actually are completely non-functioning.

Castration of women in their forties, fifties and even sixties regularly induces a great deal of ill health resembling menopausal complaints. Need more proof be offered that menopausal ovaries do contribute importantly to a menopausal woman's enjoyment of abundant good health and sense of well being?

Another clinical fact should be considered. What is the actual incidence of carcinoma developing later in an ovary which appears free of any apparent pathology when examined at the time of operation? In my opinion, it is extremely low.

There is little factual data to support the proposition that normal ovaries should be removed from any woman at any age including those approaching the age of, actually in, or many years after the onset of a natural menopause. Before castration of menopausal women is generally accepted as a rational or justifiable routine operation, much more factual data should be accumulated to support the thesis that these ovaries are completely non-functioning and that their retention is actually a health hazard.

In my opinion, castration should not be a routine procedure in menopausal women or in women nearing the natural menopausal age.

15 E. Monroe St.

Management of Patient with Acute Renal Failure*

By Robert E. Johnston, Lt. Colonel, M. C., William Beaumont Army Hospital, El Paso

The management of acute renal failure requires exacting and constant teamwork between clinicians, the laboratory service and the nursing service. The principles of treatment are: Proper fluid control, accurate electrolyte balance, adequate caloric intake, prophylaxis against infection, and when necessary, removal of retention products by dialysis or lavage.

The most serious error in fluid balance is overhydration. The proper quantity of water required during the anuric phase varies from 500 to 1000 cc per 24 hours depending upon whose work one reads. However, the usual figure given is 700 to 800 cc plus that which is lost by vomiting, diarrhea and drainage.

Since most of these patients are seriously injured or are in the immediate post-operative period, the fluid must, of necessity, be given parenterally. Intravenous fluid is best given by constant drip of 10 to 40 per cent invert sugar through a polyethylene venous catheter.

Ten per cent invert sugar plus hyaluronidase supposedly can be given subcutaneously, when necessary, with little discomfort. If blood transfusion becomes necessary to maintain blood pressure it is best to use packed red cells or plasma expanders.

Dextran in water is the substance of preference since, when it is not excreted, it is metabolized to CO^2 and water.

If overhydration occurs with pulmonary edema and cardiac decompensation the following measures may be used: Venasection, administration of sodium sulfate 50 gram by mouth to cause diarrhea or vividialysis with hypertonic glucose.

Important Problems

In controlling electrolyte balance, the sodium and potassium levels are the most important problems. In general, sodium should not be administered during the anuric phase except when necessary to replace sodium loss or to combat severe acidosis.

However, during the diuretic phase large quantities of sodium are necessary to replace that lost in the urine. Three grams of sodium chloride for each 1000 cc of urine it the usual requirement.

Hyperkalemia, which may lead to cardiac arrest, is considered by most to be the usual cause of death in renal failure. Hypertonic IV glucose reduces loss of potassium from the cells. The simultaneous administration of dextrose and insulin will lower, at least for a short time, a high potassium.

One unit of insulin is given for every three grams of dextrose. Another temporary measure to antagonize the toxic myocardial effects of potassium is the addition of calcium gluconate in doses of 10 to 20 gm per 24 hrs. If these measures are unsuccessful vividialysis or cationic exchange resins will be necessary.

The carboxylic resin sodium salt (30 to 60 grams per day in divided doses) has been advocated by Kolff. This resin will exchange its sodium for potassium. The use of resins requires careful control of sodium uptake and withdrawal.

They are poorly tolerated orally and given rectally, they are less efficient. During the diuretic phase potassium losses requires replacement by IV potassium chloride or oral potassium gluconate.

Hypocalcemic Patients

Patients in uremia may become hypocalcemic. They may be treated with IV calcium gluconate. In addition, aluminum hydroxide may be given to prevent absorption of phosphorus.

During the anuric phase if the bicarbonate ion level drops to below 12 m. Eq. per liter this acidosis may be treated with 40 m. Eq. of sodium lactate or 6 grams of sodium bicarbonate per day. Dialysis will also relieve acidosis. During the diuretic phase, 40 to 120 m. Eq. of sodium lactate may be necessary to combat acidosis and compensate for urinary sodium loss.

Kolff strongly advocates a high caloric, low protein diet in renal insufficiency when it can be tolerated. He feels that this definitely reduces the development of hyperkalemia. Fat emulsions (Ediol, Lipomul, oral) are available to be given by mouth or gastric drip. Intravenous fat emulsion if and when available would be of considerable value.

Infections must be prevented or treated with antibiotics. Erythromycin is well tolerated. Streptomycin is best not used since excretion is interfered with in uremia thus causing a cumulative effect leading to vestibular damage.

When necessary, retention products may be removed by vividialysis. The artificial kidney is, by far, the best method. Usually five to six hours of dialysis is sufficient. Peritoneal lavage and intestinal lavage at times are both possible and effectual.

The patient in acute renal failure is not an easy one to manage. He requires considerable attention, thought and supervision and the battle is not won until recovery is complete.

BIBLIOGRAPHY

1. Kolff, W. J. — Acute Renal Failure: Causes and Treatment Med. Cl. No. Am., July 1955, 1941.
2. Kolff, W. J. — Treatment of Surgical Patients having Anuria and Uremia. SGO: 101 Nov. 1955: 563-577.
3. Corcoran, A. C. — Advance in Treatment of Acute and Chronic Renal Insufficiency. JAMA 153: 1233 5 Dec 53.

*From Symposium on Surgery in Acute Trauma delivered at William Beaumont Army Hospital, April 1956

MONTHLY CLINICAL PATHOLOGICAL CONFERENCE
EL PASO GENERAL HOSPITAL

February 21, 1957

F. P. Bornstein, M. D., Editor — Case No. 760

Presentation of case by Dr. John Verosky

History — Dr. Nathan Kleban

A Latin-American infant boy was admitted to this hospital on November 19, 1956 because of labored breathing and cyanosis.

The 21-year-old mother was said to have been anemic during her pregnancy, gave no history of rubella, was attended by a Juarez midwife at delivery. Respiration was spontaneous. Birth weight was not known. Cyanosis of lips and nail beds, which was more intense with crying, was noted the day after birth. Ability to suck was initially poor, later improved. Whether the child was offered or took three ounces of powdered milk every three hours was not clear.

Five days before admission cyanosis deepened, rate of respiration increased, choking and frothing at the mouth were described. The infant refused feedings, regurgitated what little it took. Oxygen was administered for two days at the Red Cross Hospital in Juarez. There were 10 loose stools during the day and night before admission. Quality of cry was not described.

There were no siblings. Family history was not recorded.

Physical Examination

The general and nutritional condition on admission was poor. Temperature was 98.6, subsequently fluctuated erratically between 94.0 and 103.0 F. Respiration was 48 in rate and was described as regular. Pulse rate was about 130, regular. Admission weight was five lbs. 5½ ounces, varied between five lbs. five ounces and five lbs. thirteen ounces while in the hospital. Intense cyanosis of skin and mucous membranes was present. Toes and fingers were clubbed. The neck was supple. Breath sounds were tubular. Rhonchi and crepitant rales detected. There was no chest deformity. Radial and femoral pulses were equal. The PMI was a xiphoid heave, not overactive. The first sound was split, maximal at the xiphoid. The second sound was loudest at the second left intercostal space. No murmur was heard. The liver was 2-4 cm. below the right costal margin. The anterior fontanel was open and depressed. Neurological findings were not remarkable.

Hospital Course:

Despite the administration of oxygen, digitalis, mercurial diuretics, tetracycline and supportive therapy there was no improvement in the baby's condition, which remained poor. Cyanosis seemed to be continuous, although the nurses' notes several times stated that it was present at intervals, and on December 5 there was a notation that cyanosis was not apparent, although there was a delay in replacing an empty oxygen tank. Stools were not remarkable. Feeding was by gastric tube during most of the hospital stay without apparent regurgitation. Pediatric and cardiac consultants participated in the infant's care. On the 19th hospital day respirations were labored with suprasternal and subcostal retraction, later Cheyne-Stokes in character; cyanosis was more profound; rales and liver size increased; the skin became cold and clammy. Death intervened on the 20th hospital day, December 7, 1956.

Laboratory:

Hemoglobin: 11.5, 14.5, 12.4, 10.0 gms.; Hematocrit: 38, 50, 45, 38 per cent; RBC 4,000,000; WBC: 34,200, 20,400, 14,600; Segs. 47, 51, 54; Stabs. 1, 4, 5; Juveniles 6, 1: Lymphs., 43, 40, 41: Monos. 3, 2: Eos. 1, 1.

Urinalysis: Straw, acid, S. G. QNS, albumin 2+, sugar 3+, acetone negative, WBC 5-10, P.P.D. No. 1 negative 48 hours. Methemoglobin negative.

X-ray: Chest film: Pneumonitis, right mid lung field. Findings consistent with pericarditis with effusion. A congenital lesion cannot be excluded.

Findings consistent with congenital heart disease... possibly tetralogy of Fallot.

Electrocardiograms (5) interpretation by cardiac consultant: No definite evidence of chamber enlargement; interpretation by pediatric consultant: Right ventricular, left and right atrial hypertrophy. Subepicardial ischemia over right ventricle.

X-Ray Discussion—Dr. Charles C. McVaugh

The original single anterior-posterior view of the chest on November 19 reveals considerable cardiac enlargement and an increased vascularity of both lung fields. There are also changes in the right chest

consistent with an inflammatory process. The liver appears somewhat enlarged.

Both lungs appear well expanded with no evidence of postpartum atelectasis. Radiographically we must consider a congenital heart lesion with a superimposed pneumonitis. Also to be considered at this examination is an acute cardiac dilatation or possible pericardial effusion.

Re-Examination

On November 21, re-examination of the chest reveals considerable decrease in the cardiac size with the cardiac silhouette approaching a more normal contour.

The pulmonary markings, especially in the right upper chest, are still increased over normal consistent with a pneumonitis.

The final radiographic examination available on the 27th of November reveals a further decrease in the cardiac size and the size and contour are now within normal limits for an infant of this age.

The lung fields reveal a uniform density which may be due in part to respiratory phase.

However, they are more suggestive of a widespread pneumonitis. The liver appears somewhat smaller than at the original examination.

Unfortunate

It is unfortunate that later radiographic examinations near the terminal stage of this illness are not available. However, in view of the return to normal of the cardiac size and contour it is unlikely we are dealing with a congenital heart lesion.

On the other hand persistent and progressive pulmonary changes indicate that we are dealing in all probability with an inflammatory process and that the cardiac enlargement observed on the original examination was due to an acute cardiac dilatation or possible pericardial effusion. The exact nature of the inflammatory process I cannot identify.

In conclusion, I feel that we are dealing primarily with an inflammatory disease and not a congenital heart lesion and that the cause of death was probably the result of this inflammatory process.

Clinical Discussion — Dr. John Verosky

We have, then, a two month old infant, cyanotic from birth, who developed a pneumonia and congestive failure and died. Our problem is to predict the anatomical malformations found at autopsy.

We must first decide whether the child had heart disease. Severe pulmonary disease can cause cyanosis, dyspnea, failure to gain; it can also cause abnormal cardiac findings, such as cardiac enlargement and abnormal electrocardiograms.

The syanosis since birth, long preceding the terminal episode of what appears to be a pneumonia, argues for a primary heart defect. We have the further advantage of a negative methemoglobin determination.

Finally, definite clubbing was present, reinforcing the parents' report of significant cyanosis from an early age.

Heart Disease

We conclude that this child has heart disease. Even without cyanosis, the chances are against acquired heart disease at this age, though of course myocarditis has occurred even in the newborn nursery.

Unless one accepts endocardial fibroelastosis as an acquired lesion — a perfectly defensible position — it seems most likely that this child has congenital heart disease.

A purulent pericarditis secondary to a pneumonia is similarly unlikely with the story of cyanosis since birth.

On physical examination, there was definite generalized cyanosis, not of the peripheral type seen in pneumonia or cardiac failure, but the marked degree seen with right to left shunts.

The degree of clubbing was striking even for this amount of cyanosis. This suggests that a relative anemia interfered with the manifestations of the true degree of the shunt.

Physiologic Depression

The physiologic depression of hemoglobin usually seen at two months of age may have combined with some anemia from infection to produce this anemia, with the added influence of undernutrition, seen here as in many cases of severe congenital heart disease.

Detectable pretibial edema is frequently absent in congestive failure in infants.

However a liver palpated only two cm. below the costal arch makes the presence of cardiac failure uncertain at the time of admission; later in the hospital stay the child gained weight and the liver became larger.

We commonly draw the line for normal livers in small infants at three cm. Left chest deformity is a common sign of long-standing right ventricular hypertrophy with right ventricular dilatation in the growing chest; it is often absent in severe concentric right ventricular hypertrophy such as in pulmonic stenosis and tetralogy, and much more apt to be present if there is dilatation of the right ventricle, such as in atrial septal defect.

No left chest prominence was seen in this child, but he had not grown. The point of maximal impulse is a xiphoid heave.

Right Ventricular Preponderance

This suggests right ventricular preponderance, and so is often found in the normal neonate. Though

not stated in the protocol, the first sound was poor in quality, suggesting myocardial dysfunction.

On the other hand, the second sound, louder on the left, was of at least fair quality, arguing residual pulmonic stenosis.

No murmurs were present. Of course, in a weak flabby heart, significant murmurs may be obscured. Further, there is at least one defect in which murmurs may regularly be absent in the neonatal period, namely, atrial septal defect.

However, in a cyanotic infant of two months of age, one is more apt to think of the most common right to left shunts without stenosis or septal defects, namely, complete transposition of the great vessels with intact septa, and coarctation or atresia of the aorta proximal to the insertion of the ductus.

This latter is not to be confused with the ordinary (so-called adult type) coarctation with its relative femoral hypertension.

Cardiac Enlargement

The chest X-rays show cardiac enlargement and increased pulmonary vasculature; so much is definite. We add, with more caution, that there is prominence of the right ventricle and right atrium, and that the waist of the heart is strikingly narrow.

This is suggestive of transposition, because in this condition the aorta and pulmonary artery tend to be more in a direct anterior-posterior line than normally.

However, in the lateral view, the waist is still narrow, which makes one think of the possibilities of the absence of one or other of the great vessels.

Protocol

The protocol points out a difference in opinion on the electro-cardiograms. Fundamentally, there are two points of view on electrocardiograms in children; the analytic and the statistical, neither of which is adequate by itself.

The analytic method dwells on the actual electrical background of the various deflections. The statistical method recognizes that we have very little experimental data to support theorizing in children, especially in congenital heart disease, when one does not know which ventricle is where.

The essence of the statistical approach is that one must interpret electrocardiograms in children against the background of growth and development.

For instance, this child shows an upright T in VI. This, statistically, is quite rare in normal infants between two weeks and one year of age, and usually represents pathologic right ventricular hypertrophy.

Observed Fact

I cannot tell you why this is so, only that it is the observed fact. Further evidence for right ventricular hypertrophy in this child is an S of 11 mm. in V6; An S wave exceeding 6 mm. in a normal child of two months is rare.

The electrocardiogram shows tall and peaked P waves in II, III, and aVr on various occasions; the P in I is occasionally flat-topped.

These suggest enlargement of both atria. With the possibility of pericarditis in the back of the mind, up to 3 mm. elevation of ST segments over the right ventricle makes one wonder about the sub-epicardial musculature.

A good Q in VI is absent; stastically, this is against aortic atresia.

Abnormal Findings

Thus far we have listed the abnormal findings in this child, occasionally being reminded of this or that malformation. We will now list the possibilities and weigh the evidence for the best choice with the information available.

Congenital heart disease can be divided into cyanotic and acyanotic types. The cyanotic types can be divided into those with right ventricular hypertrophy and those with left ventricular hypertrophy. Those with right ventricular hypertrophy can be divided into those with decreased and those with increased pulmonary vasculature. This child fits into the latter sub-group. There are seven of these to consider:

1. Transposition of the great vessels
2. Aortic atresia (and infantile coarctation)
3. Total anomalous pulmonary venous return
4. Eisenmenger's Disease
5. Single ventricle
6. True truncus arteriosus
7. Severe bizarre malformations.

Complex Venous Anomalies

The last one of these includes complex venous anomalies, cor biloculare, and so forth; we eliminate them because most of these children will usually die even sooner than two months, because most of them have all sorts of murmurs, and because if one of these is present we haven't much of a chance of identifying it antemortem without physiologic investigations.

Single ventricle is unlikely because most of these children do not do this poorly.

The true truncus with marked cyanosis is usually one without pulmonary arteries, with blood supply to the lungs via bronchial arteries springing from the descending aorta. These arteries are usually visible on X-ray, and usually generate a good continuous murmur. These children, too, usually do much better than this child.

Eisenmenger's Disease

Eisenmenger's disease only seldom gives this degree of difficulty and this much cyanosis in early childhood; a ventricular septal defect murmur is usually audible.

Total anomalous pulmonary venous return is more attractive, but, again, these usually do well for years, and a large atrial septal defect is usually present, with a good murmur.

Aortic atresia or infantile coarctation is very possible, because this is the age at which these children disintegrate, and because of the narrow waist of the heart.

Against the diagnosis are the absence of any difference in cyanosis between fingers and toes, and the absence of a good Q in VI; neither of these findings, however, are always present.

Transposition of Aorta

Transposition of the aorta is also very possible. With no murmur, we would have to assume that mixture of the blood occurred solely through a patent foramen ovale, a ductus arteriosus, and perhaps anomalous pulmonary veins.

Without a ductus, these children usually die within the first two weeks of life. With a ductus, it is common enough for closure of the ductus to begin, with increasing deterioration of the child, at about this age.

Sifting these probabilities, the two most promising malformations seem to be:

1. Transposition of the great vessels with intact septa.

2. Aortic atresia or coarctation proximal to a patent ductus. In addition, the child had a terminal pneumonia.

Some Comments

I would like to add a few comments upon the management of this child. He was given Similac and mercurials. Similac has a sodium concentration similar to breast milk, and both have only 1/3 the sodium content of ordinary cow's milk.

We have seen on several occasions infants with congenital heart disease, who did fairly well on breast and who rapidly gained weight and went into failure when placed on evaporated milk formulae.

We believe quite strongly in mercurials in cardiac failure in infants, and usually like doses more regularly and in larger amounts than that given here.

The combination of a true low sodium formula, such as Lanolac, plus mercurials in an infant can be exceedingly hazardous, without very careful control by frequent blood electrolyte determinations.

We therefore usually elect to give either Lanolac (which only the youngest infants will ordinarily accept, due to its lack of palatability) or mercurials, using a less severe sodium restriction.

Daily Body Weights

We pay a great deal of attention to daily body weights, and in this case a preterminal rise in body weight heralded the final disintegration. There was considerable evidence for digitalis effect in this child's serial electrocardiograms — ST segment and T wave changes, though the corrected QT interval remained essentially unaltered throughout his hospital course.

Of course we are frequently disappointed with digitalis in congenital heart disease, because increased myocardial efficiency cannot correct shunts and completely overcome the stress of superimposed pneumonia, but we think that it should usually be tried.

It might have been useful to have given this child intravenous iron in an attempt to stimulate rapid reticulocytosis, though response in the presence of superimposed infection is not likely to be striking.

No Fluoroscope

We did not fluoroscope this child, and perhaps should have, except that we felt that the additional evidence to be gained would be small, and the stress on the child definite, though also small.

We did not catheterize this child because of the poor shape he was in, and because we had no great hope that a surgically correctable lesion was present.

But this discussion is of more than academic interest; the time is nigh when young infants in at least similar predicaments may frequently be helped by surgery, so that attempts at antemortem diagnosis will be of ever-increasing importance.

Clinical Diagnosis: — Congenital Heart lesion.

Dr. Verosky's Diagnosis: 1. Transposition of the great vessels with intact septa; 2. Aortic atresia or coarctation proximal to a patent ductus.

Pathological Diagnosis: 1. Lipoid pneumonia; 2. Sub-arachnoid hemorrhage, due to birth injury.

Pathological Discussion — Dr. F. P. Bornstein:

On autopsy we found an emaciated male infant which weighed 2700 grams. Examination of the organs of the chest revealed that the heart was essentially normal.

The lungs had a peculiar reddish pale color. They felt heavy. The cut surface showed a solid pale yellowish-gray lung parenchyma. The lung tissue did not float in water.

This obviously represents some type of pneumonia.

On microscopic examination (Fig. 1) you can see very easily that this is a chronic pneumonitis of long standing. The most unusual feature of this pneumonitis is the number of foam cells which on special stains are positive for lipoid. (Figure 2.)

Question Arises

The question then arises, why was this child cyanotic since birth? This question was answered by examination of the brain which revealed a subarachnoid hemorrhage of some standing.

In trying to interpret the course of events in this case, we can come to the following conclusions: This child received a birth injury which produced cyanosis.

By the time it had come to the hospital a lipoid pneumonia started to develop which proved fatal.

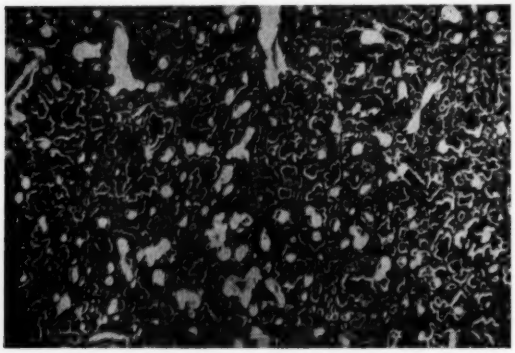


Figure I

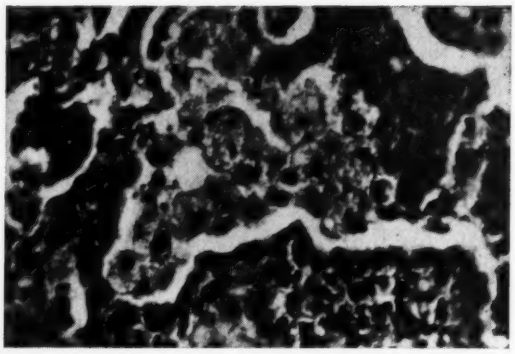


Figure II

A chemical examination of the lipoid substance which was amply present and even floated in the formalin fixed material, revealed it to be mineral oil.

Careful examination of the hospital records shows that mineral oil was not used on this infant either for nose drops or for greasing the catheter which was used for the tube feeding.

We therefore assume that the damage causing the lipoid pneumonia was produced before the child was admitted to the hospital.

CANCER — CIGARETTE SMOKING

Lung Cancer In Women

Wynder, E. L., et al., New England J. M. 255:1111, 1956

Three groups of women were studied. Group I consisted of women with epidermoid lung cancer. Group II was comprised of women with adenocarcinoma of the lung. Group III served as controls and consisted of women with tumors at sites other than the lung. There were more heavy smokers in Group I than in Groups II and III. After weighing the evidence the authors assert the "posit"* that cigarette smoking increases the risk of epidermoid lung cancer in women.

**The most probable hypothesis on the basis of the evidence presented.*

Sloan-Kettering Institute & National Institutes of Health.

Clinical Clippings, March, 1957.

"....To Work Effectively Together"

By Leo E. Hollister, M. D., Veterans
Administration Hospital
Palo Alto, California

... "One of the benefits from the introduction of tranquilizing drugs might be the development of a closer working relationship between psychiatrists and other physicians. Pharmacotherapy is as strange to most psychiatrists as it is familiar to most generalists. On the other hand, psychotherapy is as strange to most generalists as it is familiar to most psychiatrists. It now appears that a large segment of patients in the offices of both psychiatrists and generalists require both forms of treatment. The obvious solution is for psychiatrists and generalists to find a way to work effectively together.

Closer Relationship

"The first step in bringing about a closer relationship is for the generalist to learn more about psychiatry. The generalist frequently sees the potential psychiatric patient early in his disorder. To be able to determine which patient requires psychiatric treatment and which patient can be handled with "supportive psychotherapy" often requires considerably more diagnostic acumen than is provided by the usual psychiatric training offered by medical schools. This matter is of some importance. The excessively tired, impotent middle aged man may be a more likely potential suicide than a case of male climacteric.

"A man with alcoholic gastritis might have doubts about his wife's fidelity which troubles him far more than indigestion — a trouble which he might attempt to solve by killing her. The young wife with every complaint in the book might be a candidate for a psychotic break upon the addition of a relatively small stress, such as the birth of a child or the transfer of her husband to a new city. Yet all these tragedies could possibly be prevented by early recognition of the psychiatric problem underlying the physical complaints. Clearly additional post-graduate training in psychiatry for generalists could yield high dividends.

Second Way

"A second way in which psychiatrists and generalists might be brought closer together would be to establish psychiatric units in local hospitals. The introduction of the tranquilizing drugs has made feasible the care of all but a few psychiatric patients in general hospitals. Psychiatrists would benefit by being brought from the isolation of private sanitaria and State Hospitals to a closer contact with the general medical community. Because some psychiatrists prefer not to be responsible for the administration of drugs to patients to whom they are giving psychotherapy, the collaboration of the generalist might be quite welcome. Having two doctors might be of some advantage to the patient, for he can vent his gripes about the psychotherapist to the generalist.

Third Way

"A third way whereby generalists and phychiatrists could work together effectively is in the supervision of maintenance therapy with tranquilizing drugs when the patient is discharged from psychiatric hospitals. More and more patients are each day being released from hospitals on continued treatment with the drug. They require the services of a medical man familiar with the use of these drugs, but not necessarily a psychiatrist. Many of these patients can be kept out of the hospital indefinitely with proper after-care. The well trained generalist is in a good position to carry out this function."

Medical Times October, 1956, Pages 1024-25.
"Tranquilizing Drugs and the Generalist"

Coming Meetings

Texas Medical Association, 90th Annual Session, April 27 - May 1, Dallas. Headquarters, Baker and Adolphus Hotels. Headquarters, Women's Auxiliary, Statler Hilton Hotel.

Texas Orthopaedic Association, Annual Meeting, April 29, Adolphus Hotel, Dallas.

American Trudeau Society, May 6-9, Kansas City.

New Mexico Ophthalmology Society, Santa Fe, May 11 and 12.

American Gastroenterological Association Annual Meeting, Broadmoor Hotel, Colorado Springs, May 16.

New Mexico Medical Society, May 15, 16, 17, in La Fonda Hotel, Santa Fe.

District 8, American College of Obstetrics and Gynecology, Reno, Nevada, May 27 & 28.

American College of Chest Physicians, Annual Meeting, May 29 - June 2, Hotel Commodore, New York.

American Fracture Association, September 30, October 1 and 2, 1957, in El Paso. Dr. W. Compere Basom is in charge of arrangements.

Southwestern Medical Association, October 9, 10, 11, in El Paso.

Texas Surgical Society, El Paso, April 7 & 8, 1958

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